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Dung Beetles (Coleoptera, Scarabaeidae) of Thailand

Part 5. Genera *Copris* and *Microcopris* (Coprini)

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Abstract In the fifth part of this study on the Thai dung beetles, the genera *Copris* and *Microcopris* (tribe Coprini) are taken up. Three new species, *Copris* (s. str.) *uenoi* sp. nov., *C.* (s. str.) *lannathai* sp. nov. and *C.* (s. str.) *mongkhoni* sp. nov. are described. Keys are given to *Copris* and *Microcopris* distributed in Thailand, and explanatory photographs of habitus and male genitalia are also provided for each species.

This is the fifth part of the serial study on the Thai dung beetles, and the genera *Copris* and *Microcopris* are taken up.

From this part, Teruo OCHI, one of the representative specialists of Asian dung beetles, joins the authors.

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Key to the Genera of Coprini from Thailand

1(2) Pronotum with two strong lateral carinae joining in front and behind; elytra with ten striae and a strong lateral costa between the 7th and 8th striae; protibiae with three lateral teeth; body not so strongly convex dorsad; meso- and metatibiae without distinct transverse carina on outer side. . . . . *Synapsis* BATES[1].

2(1) Pronotum without two strong lateral carinae; protibiae usually with four lateral teeth, rarely with three; body usually strongly convex dorsad; hind tibiae with at least one distinct transverse carina on outer side.

3(4) Elytra with ten striae and two strong lateral carinae; protibiae with three sub-obliquely longitudinal carinae on ventral side . . . . *Catharsius* HOPE.

4(3) Elytra with ten striae and one strong lateral costa along 10th stria; protibiae without three sub-obliquely longitudinal carinae on ventral side . . . . 5.

5(6) Prothorax with front angles excavated on ventral side, posterior edge of the excavation defined by a deep impression; pronotum mostly simple (sometimes with a pair of protuberances), with front angles strongly and sub-triangularly produced anteriad, not distinctly truncate; protibiae obviously broad, deplanate dorsally, without distinct carina arising from outer teeth on dorsal side. . . . . *Microcopris* BALTHASAR.

6(5) Prothorax with front angles usually not excavated on ventral side, rarely excavated but the posterior edge of the excavation not distinctly defined by a deep impression; pronotum mostly horned, or tuberculate, or carinate, or simple in some species, with front angles mostly widely truncate; protibiae not noticeably broad, with two or three distinct carinae arising from the outer teeth on the dorsal side . . . . *Copris* MÜLLER.

Genus *Copris* MÜLLER, 1776

Copris MÜLLER, 1776, Zool. Danicae Prodromus, etc., Havniae, 55. [Nec *Copris* GEOFFROY, 1762, Ins. des Env. Paris, 87.] Type species: *Scarabaeus lunaris* LINNÉ, 1758.

Systematic position. The genus *Copris* was considered for a long time to have been erected by GEOFFROY (1762). LANDIN (1957) pointed out that the justifiable author of the genus should be MÜLLER (1776).

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[1] For the details about the genus *Synapsis* from Thailand, see Part 1 of the present series of papers (1999, p. 453).

ARROW (1931) placed this genus in the tribe Coprini of the subfamily Coprinae. PAULIAN (1945) regarded it as a member of the subfamily Scarabaeinae. BALTHASAR (1963) regarded it as a member of the tribe Coprini in the subfamily Scarabaeinae. KABAKOV and NAPOLOV (1999) also placed it in the tribe Coprini of the subfamily Scarabaeinae. OCHI, KON and KIKUTA (1996) placed it in the tribe Coprini of the subfamily Coprinae.

WATERHOUSE (1891) erected *Litocopris* for African species as a subgenus of the genus *Copris*. BALTHASAR (1963) recognized only two subgenera, *Paracopris* and *Microcopris* from the Palearctic and Oriental Regions, both described by him in 1939 and 1958, respectively.

General features. Body compact, convex or slightly depressed, mostly without clothing on dorsal surface.

Head broad, rather semicircular; clypeus fused with ocular lobes, with apex often feebly notched at the middle. Antennae 9-segmented. Pronotum broad and transverse; apex furnished with membranous fringe; front angles usually broadly rounded, hind angles obtuse; base with a deep groove. Scutellum wanting. Elytra not very short, each with ten striae and one strong lateral costa.2)

Meso-metasternal line angulate in the middle; metasternum rather long; mesocoxae long and nearly parallel. Abdomen very short. Legs not long; femora very thick; protibia with four, or occasionally three, external teeth; meso- and metatibiae short, broadly dilated at the posterior end, the former without and the latter with a strong transverse outer carina; protarsi very short; meso- and metatarsi rather short, with basal segment about twice as long as the 2nd.

Mandible moderately long, with a long hairy fringe at the end. Maxilla not long, with a broad terminal lobe and slender palpus. Mentum more or less transverse; labial palpi far apart, their basal segment being rather long and narrow, 2nd short, and 3rd very small.

Second sexual characters remarkable, most distinctly so in the male head, pronotum and legs.

Distribution. Asia including the Malay Archipelago and Philippines, Europe, Africa and North and Central Americas.

Distributional Records from Thailand

GILLET (1910) described *Copris siamensis* from Thailand. ARROW (1931) listed two species (*C. punctatus* GILLET, 1910, *C. confucius* HAROLD, 1877) and PAULIAN (1945) listed a species, *C. carinicus* GILLET, 1910. BALTHASAR (1963) listed four

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2) According to ARROW (1931, p. 102), the elytra of this genus bear eight striae and a single lateral carina. BALTHASAR (1963) mentioned that members of this genus possess nine striae between the suture and "epipleuralkante" (epipleural ridge).

species (*C. siamensis* GILLET, 1910, *C. punctatus* GILLET, 1910, *C. sarpedon* HAROLD, 1868, *C. arrowi* FELSCHE, 1910) from Thailand.

MASUMOTO (1987) listed 11 species, including the members of the subgenera *Paracopris* and *Microcopris*, from North Thailand, and added (1988) two named species, and further (1989) described a species, *C. kiuchii*.

The subgenus *Microcopris* was raised to the generic rank by FERREIRA (1961).

In the course of this study the authors have been unable to examine *Copris siamensis* GILLET, 1910 and *C. arrowi* FELSCHE, 1910, originally described from Thailand, and *C. sarpedon* HAROLD, 1868.

According to BALTHASAR (1963), *C. siamensis* closely resembles *C. nevinsoni* WATERHOUSE, 1891, but the male cephalic horn is much stronger, almost rectangularly bent, and protuberances on the male pronotum extend interiad (nach innen verbreitert). After a careful comparison between the materials from Thailand and the original description by GILLET, the present authors have come to the conclusion that they are conspecific, though the Thai population (*C. siamensis*) is slightly different (presumably at the subspecies level) from the species of GILLET.

Copris arrowi, also according to BALTHASAR, closely resembles *C. tripartitus* WATERHOUSE, 1875, but can be distinguished from the latter by the clypeus slightly more strongly incised, the middle tubercle of the pronotum markedly produced anteriad and sharp, and large lateral teeth more strongly directed laterad. The authors carefully examined the original description of *C. arrowi* FELSCHE, 1910 (p. 350), and consider that this beetle is conspecific with *C. punctatus* GILLET, 1910, because the description well coincides with a maximum-sized male of *C. punctatus*.

Copris sarpedon, distributed in mountainous regions of Kashmir, Assam and Nepal, is also recorded from Thailand. This species resembles *C. punctatus* GILLET, 1910, but can be distinguished from the latter by punctures on the anterior part of median protuberances of the pronotum obviously sparser and larger. The median protuberances are more strongly pointed, and the elytral intervals are more sparsely and indistinctly punctate. Records of *C. sarpedon* from Thailand are possibly caused from misidentification of *C. punctatus*.

Descriptions of New Species

Copris (s. str.) ***uenoi*** sp. nov.

(Figs. 1–4)

Piceous, antennae, mouth parts and gula dark brown, hairs on surfaces yellowish brown; dorsal surface moderately shining, ventral surface rather weakly, somewhat alutaceously shining. Slightly oblong-ovate; rather strongly convex dorsad, weakly constricted between prothorax and elytra.

Male. Head subelliptical, with a subconical, feebly backwardly curved horn at the posterior part of clypeus; clypeus weakly wrinkled in antero-medial part, rather sparsely scattered with miroscopic punctures in lateral parts, gently reflexed along apical margin, which is weakly incised at the middle; genae (ocular lobes) flattened, slightly depressed, scattered with microscopic punctures, with subrectangular outer margins; clypeo-genal borders slightly notched; vertex mostly microscopically punctate, gently raised in middle, with a transverse impunctate part in anterior declivity.

Pronotum transverse (10 : 6.6); apex rather markedly emarginate on each side, margined along the emarginations, produced in middle; base widely triangular, finely rimmed; front angles subrectangular, with rounded corners, gently produced anteriad; lateral margins feebly produced; hind angles rounded; disc strongly convex, rather closely, often confluently punctate, the punctures somewhat ovate, each with a minute granule and adpressed hair, becoming sparser and smaller though distinct near base along the fine median longitudinal groove; anterior margin of the disc steeply declivous, upper edge of the declivity with two pairs of protuberances, markedly hollowed anteriad between interior and external protuberances.

Elytra markedly grooved and strongly punctato-striate, the punctures in the striae distant by one and half their diameter; intervals noticeably convex, sparsely covered with small punctures, more closely, irregularly covered with microscopic punctures, and also indistinctly covered with microsculpture in each central part, and rather distinctly covered with isodiametric microsculpture along grooves; humeral parts (basal parts of 6th–8th intervals, particularly 7th) gently swollen. Pygidium weakly convex, rather closely covered with small punctures, each with a fine adpressed hair.

Protibiae with three outer teeth and a feebly produced part behind the basal tooth, terminal spur flattened, with interior apex bent ventro-interiad and acute.

Female. Head with a narrow, transverse ridge, which is moderately curved anteriad; pronotum with an anterior declivity which is gentler than in male, with the upper edge not devoid of a pair of protuberances.

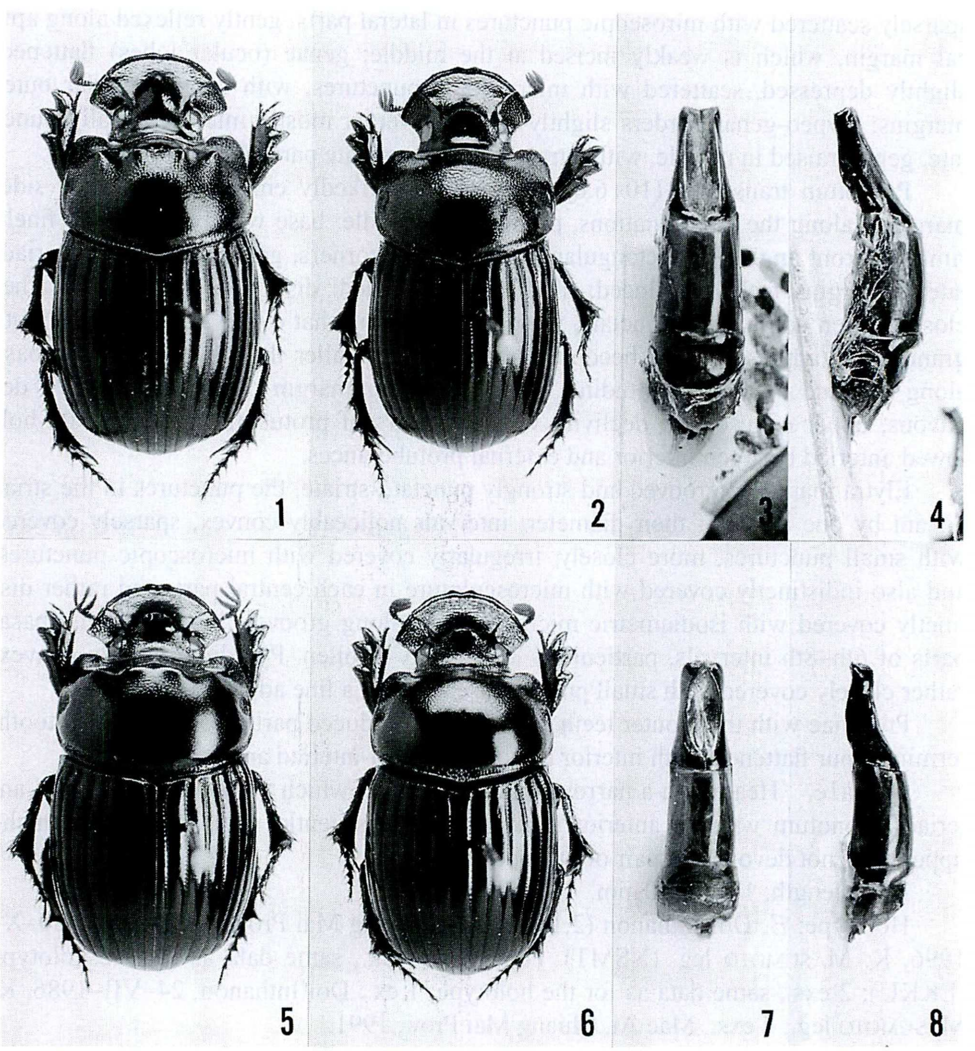
Body length: 17.0–19.0 mm.

Holotype: ♂, Doi Inthanon (2,150 m alt.), Chiang Mai Prov., N. Thailand, 30–X–1996, K. MASUMOTO leg. (NSMT). Paratypes: 1 ex., same data as for the holotype (EKKU); 2 exs., same data as for the holotype; 1 ex., Doi Inthanon, 24–VII–1986, K. MASUMOTO leg.; 4 exs., Mae Ai, Chiang Mai Prov., 1991.

Notes. The nearest relative of this new species might be *Copris* (s. str.) *kiuchii* MASUMOTO, 1989, but it can be distinguished from the latter by the characteristics mentioned in the key.

MASUMOTO (1987) listed *C.* (s. str.) *obenbergeri* BALTHASAR, 1933, from Northwest Thailand but actually it belongs to this new species.

In females, this new species can be distinguished from *C. obenbergeri* by the pronotum with anterior angles less produced anteriad and subangulate, with the subtruncate interior margin (strongly produced anteriad and entirely rounded, with the interior margin also rounded in *C. obenbergeri*), the head with genal angle more strongly produced laterad, a little narrower than right angle, and distinctly angulate (not strongly produced laterad, wider than right angle, and more obviously rounded in *C. obenber-*



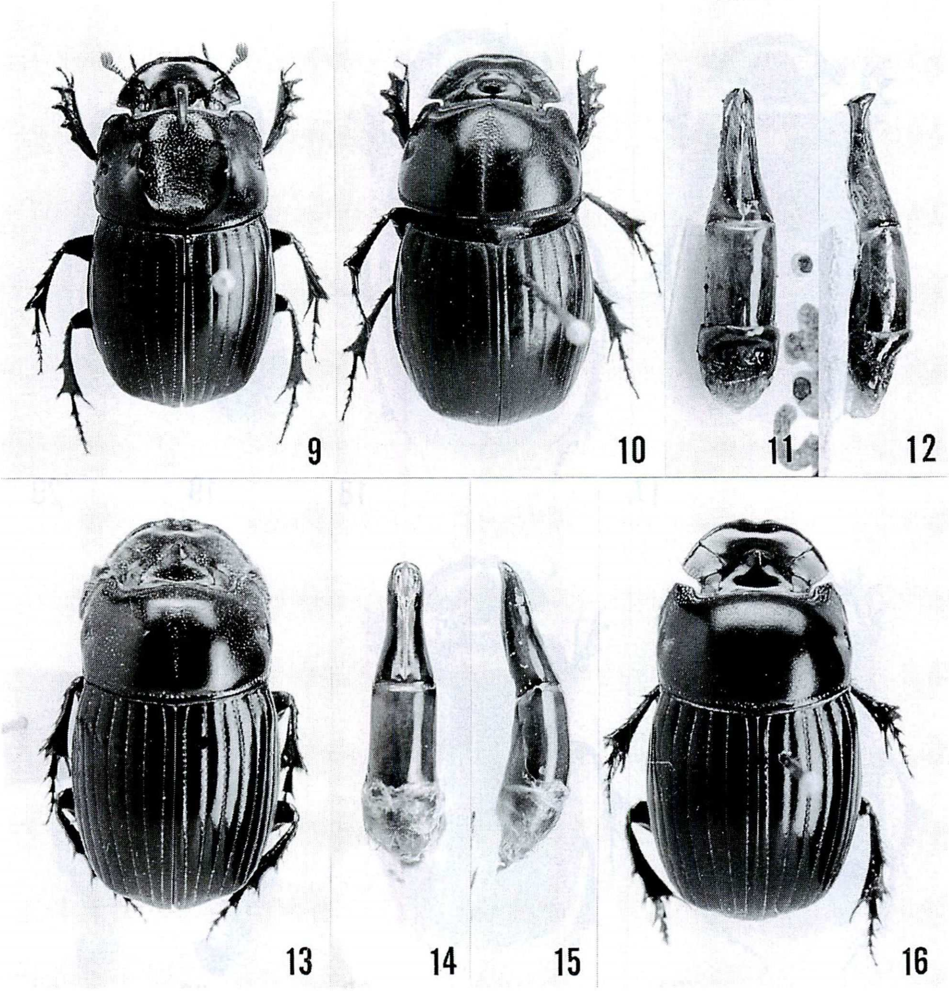
Figs. 1–8. *Copris* spp. —— 1–4. *Copris* (s. str.) *uenoi* sp. nov.; 1, habitus, holotype, ♂; 2, ditto, ♀; 3, male genitalia (dorsal view); 4, ditto (lateral view). —— 5–8. *C.* (s. str.) *kiuchii* MASUMOTO; 5, habitus, ♂; 6, ditto, ♀; 7, male genitalia (dorsal view); 8, ditto (lateral view).

geri), and punctures on the pronotum and elytra stronger and larger.

Copris (s. str.) ***lannathai*** sp. nov.

(Figs. 29–32)

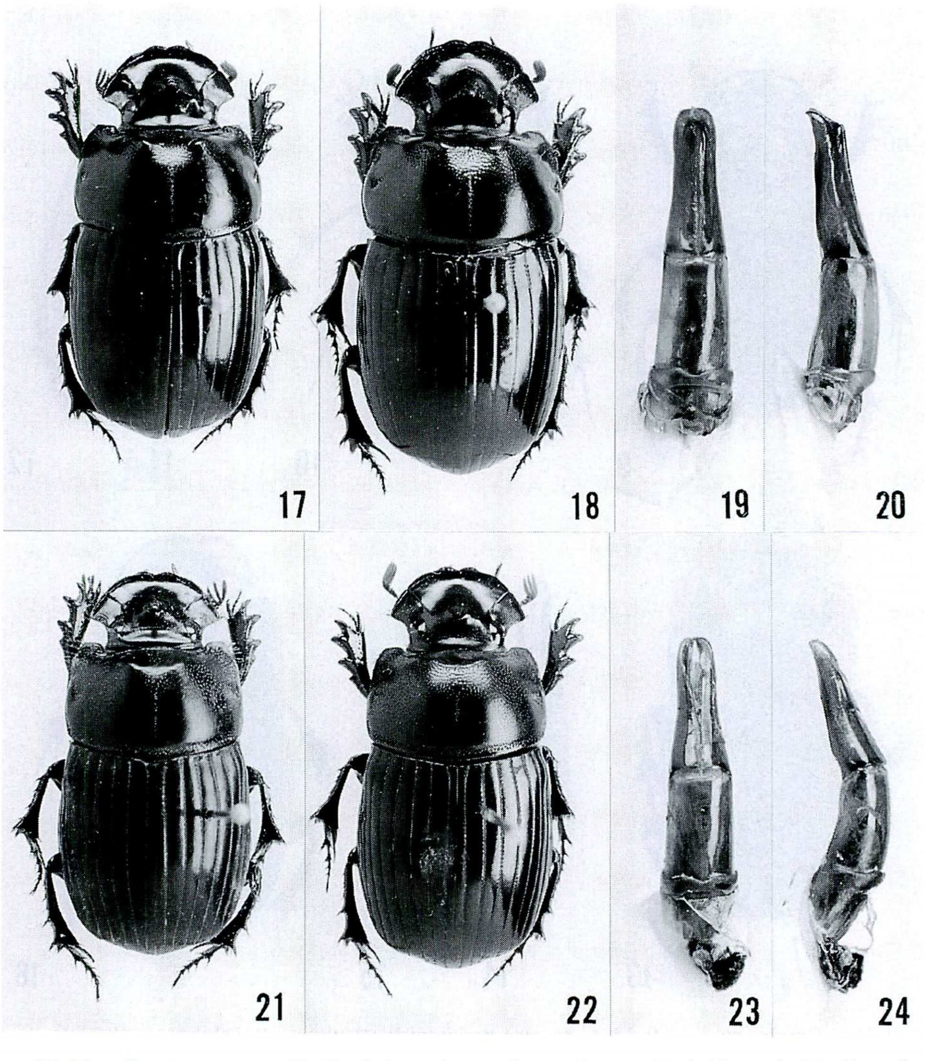
Dark brownish black to piceous, mouth parts and gula lighter in colour, hairs on



Figs. 9–16. *Copris* spp. —— 9–12. *C.* (s. str.) *nevinsoni* WATERHOUSE; 9, habitus, ♂, 10, ditto, ♀; 11, male genitalia (dorsal view); 12, ditto (lateral view). —— 13–15. *C.* (s. str.) *bengalensis* GILLET; 13, habitus, ♂; 14, male genitalia (dorsal view); 15, ditto (lateral view). —— 16. *C.* (s. str.) *mongkhoni* sp. nov., holotype, ♀, habitus.

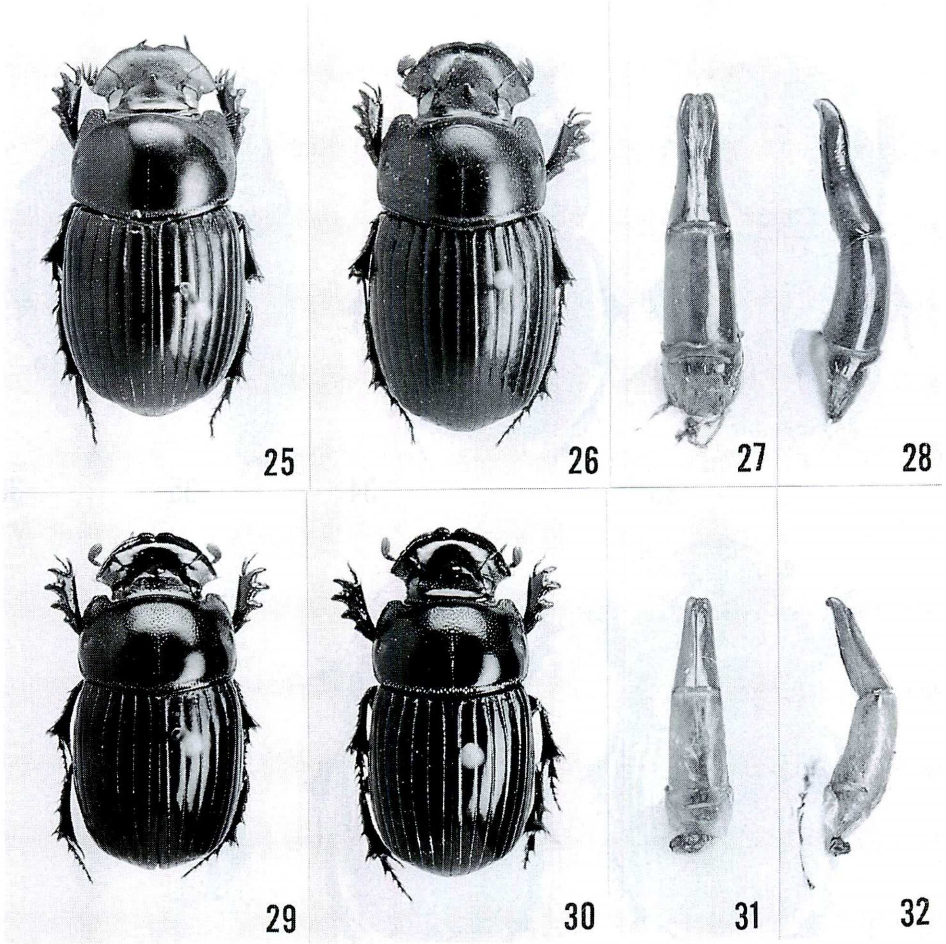
surfaces yellowish brown; dorsal surface strongly, slightly vitreously shining, ventral surface moderately shining. Body feebly oblong-ovate, strongly convex dorsad, gently constricted between prothorax and hind body.

Male. Head semielliptical, raised in middle with a very feebly transverse subconical tubercle at the centre; clypeus covered with weak microsculpture, rather sparsely scattered with microscopic punctures, which become larger basad, with apical



Figs. 17–24. *Copris* spp. —— 17–20. *C.* (s. str.) *corpulentus* GILLET; 17, habitus, ♂; 18, ditto, ♀; 19, male genitalia (dorsal view); 20, ditto (lateral view). —— 21–24. *C.* (s. str.) *confucius* HAROLD; 21, habitus, ♂; 22, ditto, ♀; 23, male genitalia (dorsal view); 24, ditto (lateral view).

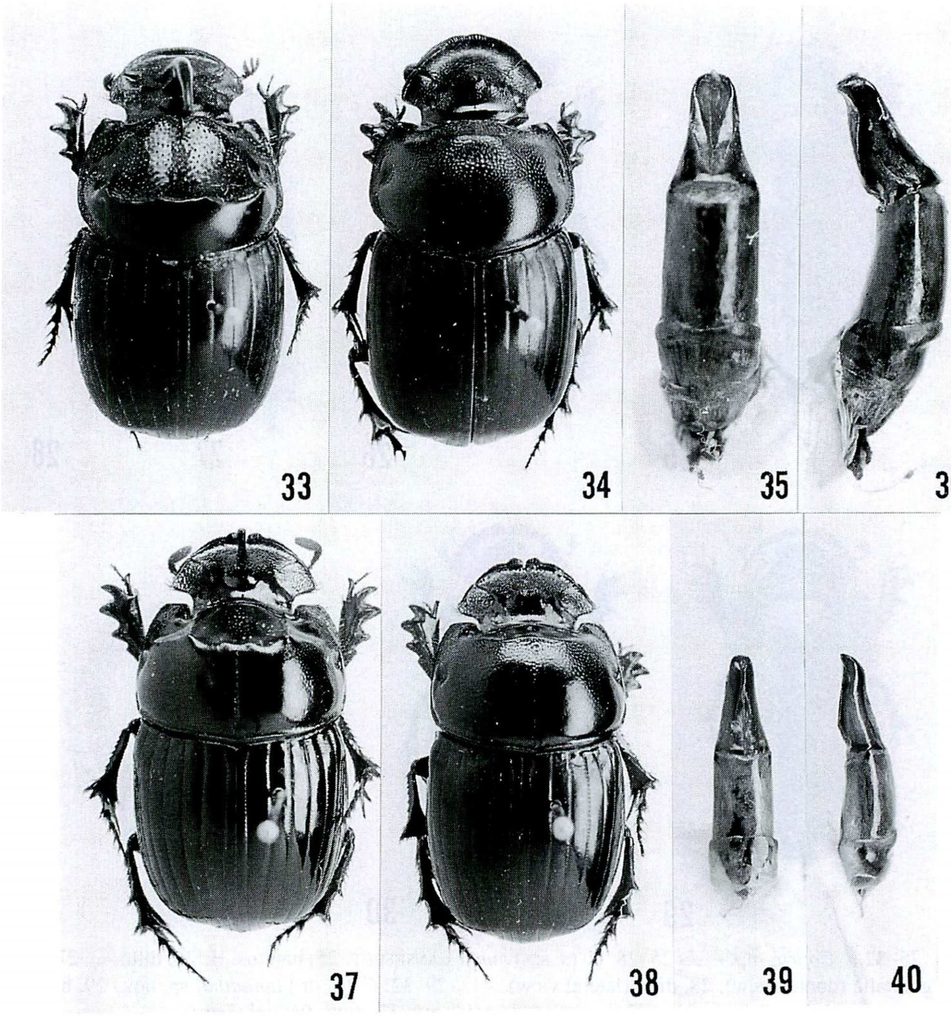
margin strongly reflexed and deeply incised at the middle, the incision remarkably lobed on each side; genae (ocular lobes) somewhat obliquely rectangular, defined from genae feebly by being depressed, rather closely punctate in postero-medial parts, gently reflexed in outer parts, with lateral corners feebly produced, outer margin notched at the border; vertex transverse-trapezoidally concave, closely scattered with shallow punctures.



Figs. 25–32. *Copris* spp. —— 25–28. *C.* (s. str.) *numa* Lansberge; 25, habitus, ♂; 26, ditto, ♀; 27, male genitalia (dorsal view); 28, ditto (lateral view). —— 29–32. *C.* (s. str.) *lannathai* sp. nov.; 29, habitus, holotype, ♂; 30, ditto, ♀; 31, male genitalia (dorsal view); 32, ditto, (lateral view).

Pronotum transverse (8 : 5); apex gently emarginate, feebly produced in middle, finely rimmed along margin; base weakly produced, margined by a row of punctures, irregularly scattered with smaller punctures along interior part of the row; front angles gently produced anteriad, with obtusely angular corners; hind angles rounded; lateral margins rounded; disc rather strongly, evenly convex, indistinctly declivous behind anterior margin, feebly covered with isodiametric sculpture on whole surface, rather closely punctate, the punctures becoming smaller posteriad and microscopic (visible under 15×) in basal part, punctate-grooved along the median line in posterior half.

Elytra slightly longer than wide (10 : 9), finely but clearly punctato-striate, dis-



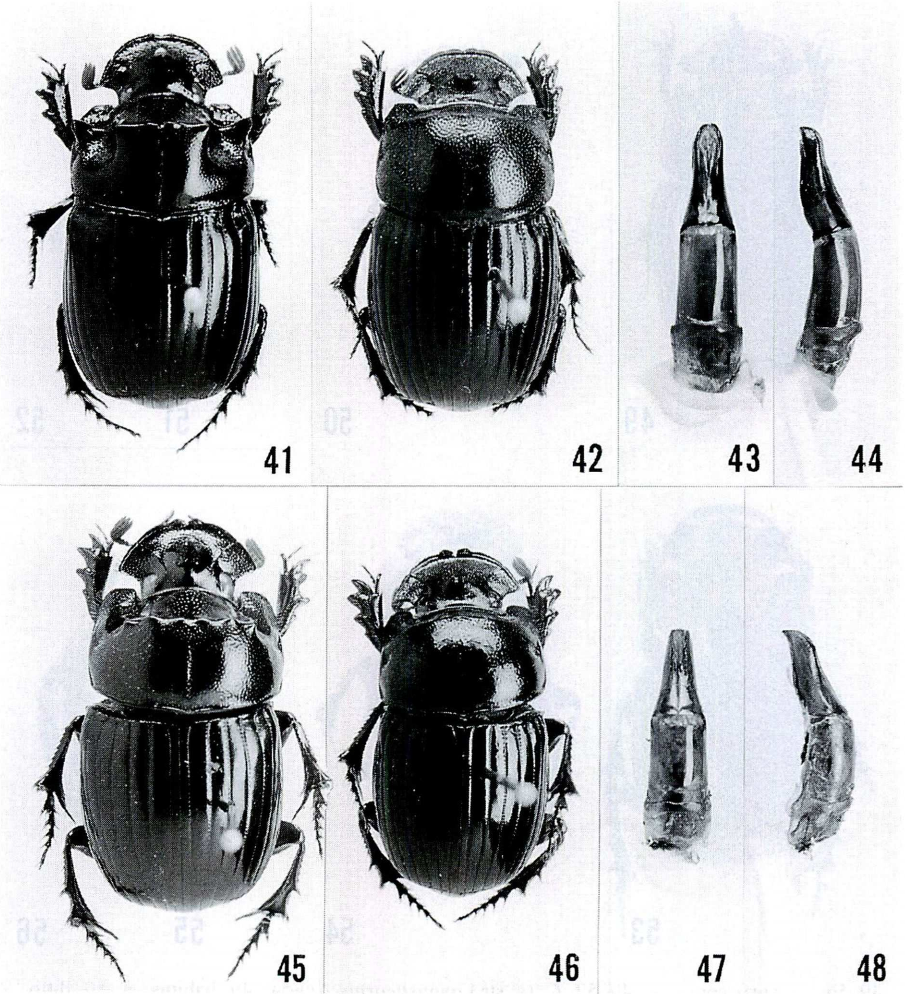
Figs. 33–40. *Copris* spp. —— 33–36. *C.* (s. str.) *iris* SHARP; 33, habitus, ♂; 34, ditto, ♀; 35, male genitalia (dorsal view); 36, ditto (lateral view). —— 37–40. *C.* (s. str.) *sinicus* HOPE; 37, habitus, ♂; 38, ditto, ♀; 39, male genitalia (dorsal view); 40, ditto (lateral view).

tance between the punctures about 1–1.5 times their own diameter; intervals gently convex, irregularly and sparsely covered with minute punctures (visible under 30×), also sparsely scattered with small punctures (visible under 10×).

Pygidium gently convex, somewhat alutaceous, rather closely covered with ovate punctures.

Protibiae quadridentate; spur of protibia rather bold, weakly curved ventrad.

Female. Sexual dimophism not conspicuous, with the exception of pronotum

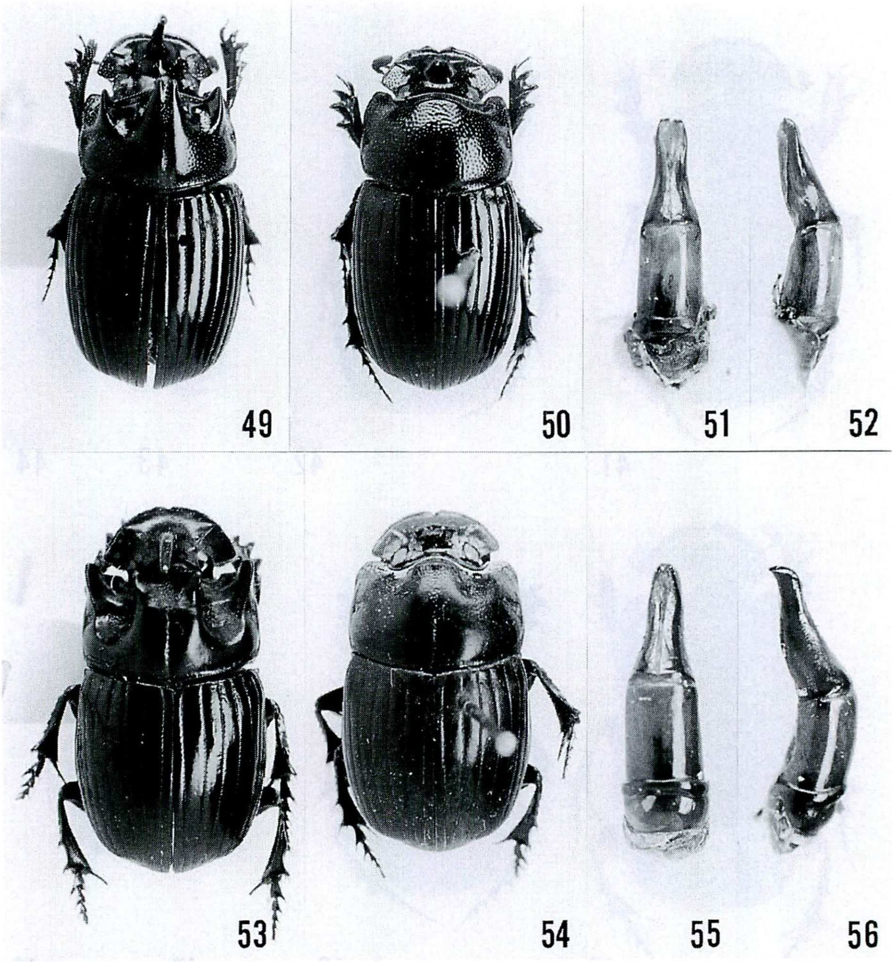


Figs. 41–48. *Copris* spp. —— 41–44. *C.* (s. str.) *punctatus* GILLET; 41, habitus, ♂; 42, ditto, ♀; 43, male genitalia (dorsal view); 44, ditto (lateral view). —— 45–48. *C.* (s. str.) *carinicus* GILLET; 45, habitus, ♂; 46, ditto, ♀; 47, male genitalia (dorsal view); 48, ditto (lateral view).

more coarsely and closely punctate with antero-lateral parts less noticeably widened, 6th visible abdominal sternites not so depressed along base as in male.

Body length: 16.0–16.5 mm.

Holotype: ♂, Mae Sa Vill., Chiang Mai Prov., N. Thailand, 23–VIII–1994, K. MASUMOTO leg. (NSMT). Paratypes: 1 ex., Mae Sa Vill., X–1995, M. YIMYAEM leg. (EKKU); 1 ex., same data as for the preceding material; 1 ex., Mae Sa Vill., 9~11–X–1987, M. YIMYAEM leg.; 1 ex., Chiang Dao, Chiang Mai Prov., 22–XI–1998, K. MASUMOTO leg.; 1 ex., Mae Sa Vill., 14–IX–1988, K. MASUMOTO leg.



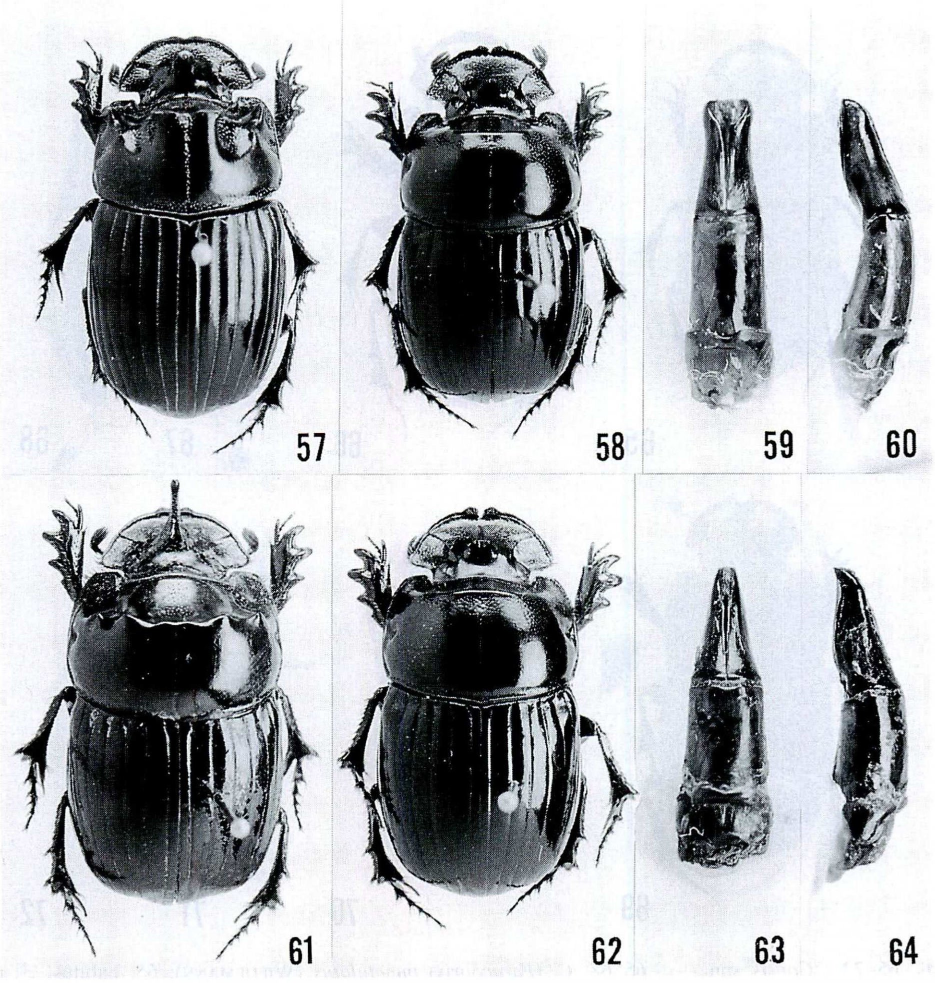
Figs. 49–56. *Copris* spp. —— 49–52. *C.* (s. str.) *angusticornis* ARROW; 49, habitus, ♂; 50, ditto, ♀; 51, male genitalia (dorsal view); 52, ditto, (lateral view). —— 53–56. *C.* (s. str.) *spinator* HAROLD; 53, habitus, ♂; 54, ditto, ♀; 55, male genitalia (dorsal view); 56, ditto, (lateral view).

Notes. This new species somewhat resembles *Copris* (s. str.) *numa* LANSBERGE, 1886, but can be distinguished from the latter by the characteristics mentioned in the following key.

Copris (s. str.) ***mongkhoni*** sp. nov.

(Fig. 16)

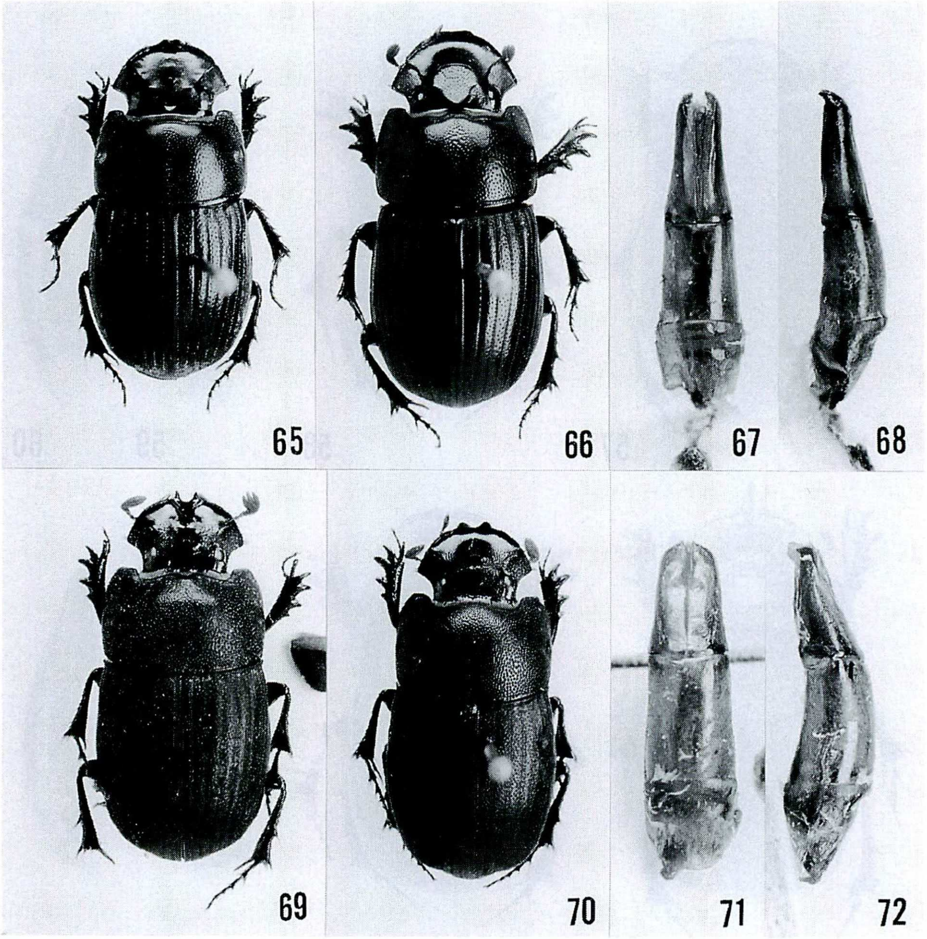
Piceous, antennae, mouth parts and gula dark brown, hairs on surfaces yellowish



Figs. 57–64. *Copris* spp. —— 57–60. *C.* (s. str.) *magicus* HAROLD; 57, habitus, ♂; 58, ditto, ♀; 59, male genitalia (dorsal view); 60, ditto, (lateral view). —— 61–64. *C.* (s. str.) *repertus* WALKER; 61, habitus, ♂; 62, ditto, ♀; 63, male genitalia (dorsal view); 64, ditto, (lateral view).

brown; dorsal surface rather strongly shining, ventral surface moderately shining. Body oblong-ovate; rather strongly convex dorsad, weakly constricted between prothorax and elytra.

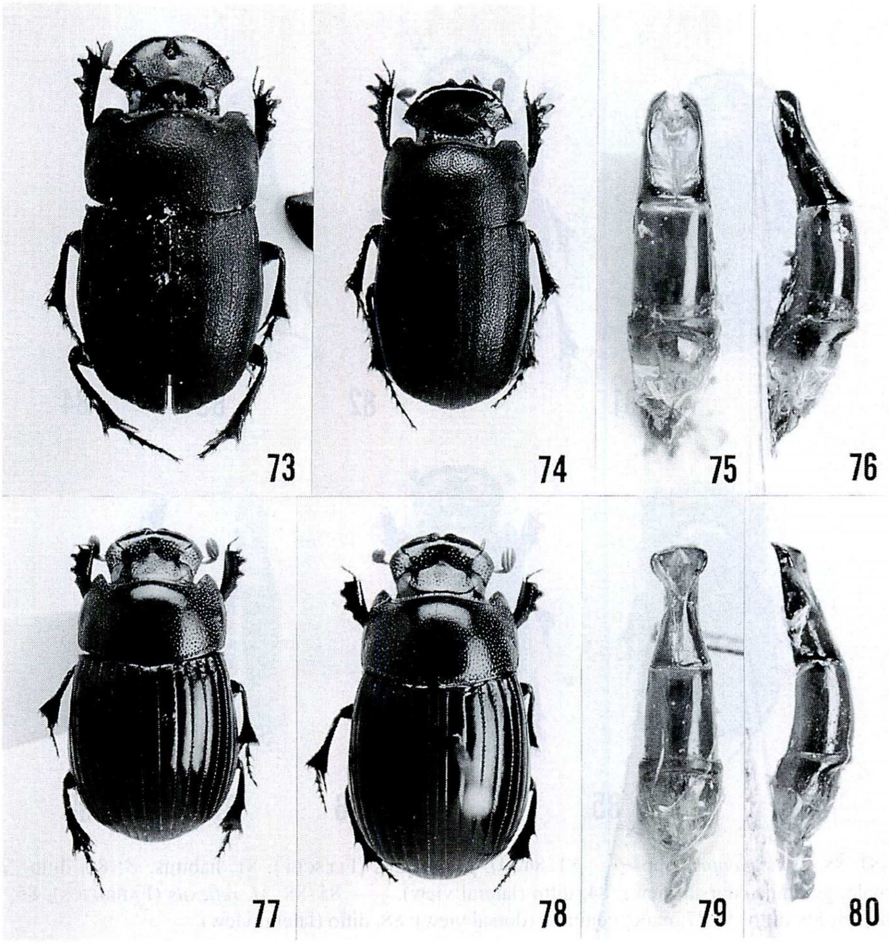
Female. Head subelliptical, very smooth; clypeus wide, inclined anteriad, apical margin almost vertically reflexed and incised at the middle, each side of the incision feebly lobed, the border of frons not defined; genae subrhombic, gently inclined outwards, areas before eyes and fronto-clypeal border very weakly depressed, scattered with microscopic punctures, covered with larger punctures in posterior parts; frons



Figs. 65–72. *Copris* spp. —— 65–68. *C.* (*Paracopris*) *punctulatus* (WIEDEMANN); 65, habitus, ♂; 66, ditto, ♀; 67, male genitalia (dorsal view); 68, ditto (lateral view). —— 69–72. *C.* (*Paracopris*) *furciceps* FELSCHE; 69, habitus, ♂; 70, ditto, ♀; 71, male genitalia (dorsal view); 72, ditto, (lateral view).

scattered with microscopic punctures, with a low subconical tubercle at the middle; vertex transversely concave.

Pronotum transverse (3 : 2); apex widely emarginate, though gently produced in middle, rimmed in the area of emargination; base almost rounded, bordered by a row of punctures; front angles subrectangular, produced anteriad, with rather acute corners; lateral margins weakly produced, slightly sinuous at the middle; hind angles rounded; disc strongly convex, scattered with microscopic punctures, coarsely punctate near front angles and areas of the lateral impressions, with neither median longitudinal groove nor ridge and distinct declivity along anterior margin.

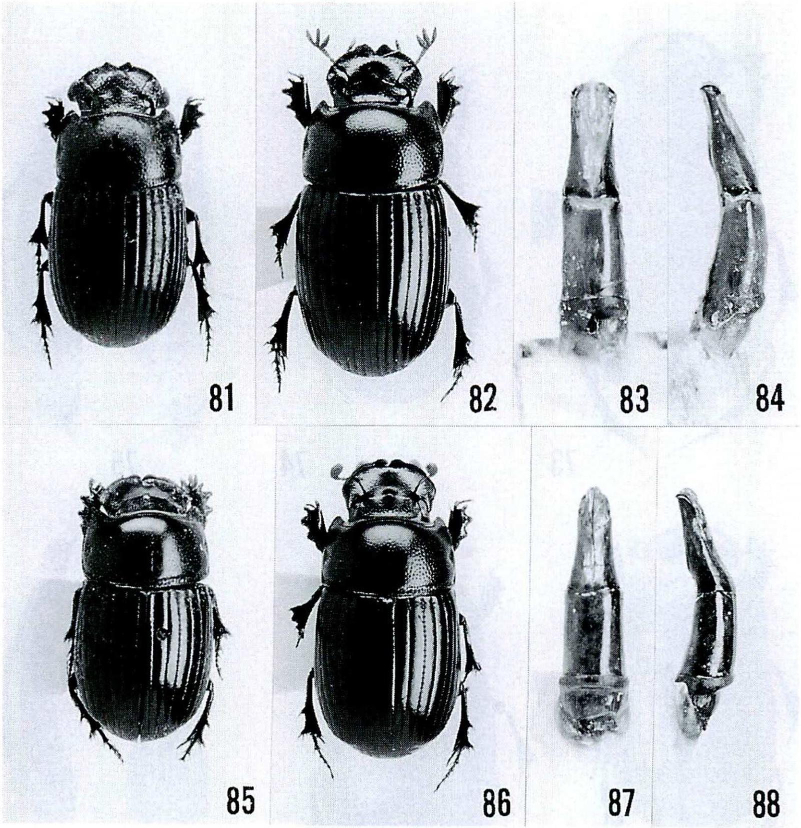


Figs. 73–80. *Copris* and *Microcopris* spp. —— 73–76. *C.* (*Paracopris*) *cariniceps* FELSCHE; 73, habitus, ♂; 74, ditto, ♀; 75, male genitalia (dorsal view); 76, ditto (lateral view). —— 77–80. *M. vitalisi* (GILLET); 77, habitus, ♂; 78, ditto, ♀; 79, male genitalia (dorsal view); 80, ditto, (lateral view).

Elytra finely but clearly punctato-striate, punctures in the striae distant from one another by one to two their own diameter; intervals noticeably convex, sparsely scattered with microscopic punctures, with humeral parts (basal parts of 6th–8th intervals, particularly of 7th) gently swollen. Pygidium weakly convex, rather closely covered with small punctures, which are slightly ovate and umbilicate.

Metasternum almost smooth and impunctate in medial part, rather strongly punctate in lateral parts; metathoracic episterna more closely punctate than the lateral parts of metasternum.

Protibiae with four outer teeth, with terminal spur rather bold.



Figs. 81–88. *Microcopris* spp. —— 81–84. *M. propinquus* (FELSCHE); 81, habitus, ♂; 82, ditto, ♀; 83, male, genitalia (dorsal view); 84, ditto (lateral view). —— 85–88. *M. reflexus* (FABRICIUS); 85, habitus, ♂; 86, ditto, ♀; 87, male, genitalia (dorsal view); 88, ditto (lateral view).

Body length: 17.0–18.0 mm

Holotype: ♀, Sakaerat Biosphere Reserve (Plantation), Nakhon Ratchasima Prov., NE. Thailand, 10–VI–2001, M. PRAIKHIAW leg. (EKKU). Paratype: 1 ex., Wildlife Sanctuary (dry evergreen forest), Khao Soidao, Chantaburi Prov., East Thailand, 26–VI–2000, M. PRAIKHIAW leg. (NSMT).

Notes. Though the type series consists only of females, this new species is very peculiar in having the pronotum without medial longitudinal groove.

Key to the Species of the Genus *Copris* MÜLLER from Thailand

1 (2) Pronotum horned or tuberculate or transversely carinate behind anterior margin, or declivous in front, rarely simple; head not excavated just beneath an-

terior margin of pronotum; elytra mostly sparsely and finely punctate, rarely distinctly punctate; body shining, strongly to moderately convex, mostly glabrous on elytra; colour usually black, often somewhat reddish in immature individuals; (Subgenus *Copris*) . . . . 3.

2 (1) Pronotum usually simple, without transverse carina behind anterior margin; head deeply excavated just beneath anterior margin of pronotum in some species; elytra moderately to closely punctate, the punctures always distinct and strong; body opaque to weakly shining, not very convex, sparsely covered with fine hairs; colour reddish brown to chocolate brown, often blackish brown; (Subgenus *Paracopris*) . . . . 37.

3 (4) Protibia with three external teeth; prothorax with front angles excavated on ventral side . . . . 5.

4 (3) Protibia with four external teeth; prothorax with front angles not excavated on the ventral side . . . . 7.

5 (6) Head with a wide smooth impunctate area between eyes, particularly conspicuous in female, also with a subconical, slightly backwardly curved horn in male; pronotum rather closely, often confluently, covered with strong somewhat ovate punctures, which become sparser and smaller though distinct near base along the median longitudinal groove; 17.0–19.0 mm; N. Thailand; (Figs. 1–4) . . . . *C.* (s. str.) *uenoi* sp. nov.

6 (5) Head usually without wide smooth impunctate area between eyes, with a transverse horn, whose summit is truncate and curved anteriad in male; pronotum closely covered with strong punctures, the punctures becoming sparser and finer along the median longitudinal groove near base; 17.5–18.5 mm; N. Thailand; (Figs. 5–8) . . . . *C.* (s. str.) *kiuchii* MASUMOTO.

7 (8) Clypeus and anterior portions of genae shining smooth, almost impunctate . . . . 9.

8 (7) Clypeus and anterior portions of genae not shining smooth, distinctly punctate or wrinkled . . . . 21.

9(10) Clypeal margin not incised at the middle. Male: head with a long and well-curved horn at the middle; pronotum with lateral margins strongly sinuate just behind front angles, which are well-produced laterad. Female: head with a very short transverse carina a little before the level of front margin of eyes, and with a small subconical tubercle a little behind the carina; 16–20 mm; Thailand, Laos, Vietnam, Malay Peninsula; (Figs. 9–12) . . . . *C.* (s. str.) *nevinsoni* WATERHOUSE.

10(9) Clypeal margin incised at the middle, with either side of the incision distinctly lobed . . . . 11.

11(12) Pronotum with front angles strongly produced forwards, acutely angulate . . . . 13.

12(11) Pronotum with front angles not strongly produced forwards, distinctly truncate apicad . . . . 15.

13(14) Pronotum with a distinct longitudinal impression along midline; head coarsely punctate in posterior half, almost impunctate and smooth in anterior half; 17–18 mm; Myanmar, Thailand (new record); (Figs. 13–15) . . . . *C.* (s. str.) *bengalensis* GILLET.

14(13) Pronotum without a distinct longitudinal impression along midline; head almost impunctate and shining smooth except for punctate narrow genal and ocular portions; Thailand; (Fig. 16) . . . . *C.* (s. str.) *mongkhoni* sp. nov.

15(16) Head almost impunctate except for narrowly punctate posterior portion of each gena; cephalic horn short, curving backwards, and pointed, posterior portion of the horn strongly depressed; pronotum with a pair of protuberances in front; 20.0–25.2 mm; Thailand, Assam, Myanmer, Vietnam; (Figs. 17–20) . . . . *C.* (s. str.) *corpulentus* GILLET.

16(15) Head strongly punctate between eyes; pronotum without a pair of distinct protuberances in front . . . . 17.

17(18) Head with a short, pointed, and backwardly curving horn at the middle; pronotum with a slight median declivity behind anterior margin. Male: upper edge of the declivity obtusely raised on each side. Female: upper edge of the declivity distinctly ridged; 14.0–22.0 mm; Thailand, Myanmar, N. Vietnam, Laos, Cambodia, C. & S. China, Taiwan?; (Figs. 21–24) . . . . *C.* (s. str.) *confucius* HAROLD.

18(17) Head without a short, pointed and backwardly curving horn, at most with a short conical upright tubercle at the middle . . . . 19.

19(20) Clypeal margin very widely and shallowly incised at the middle, without distinctly rounded lobe on either side of the incision; pronotum simple in male, slightly declivous in front, with upper edge of the declivity distinctly ridged in female; 17.8–22.3 mm; Thailand, Tenasserim, Myanmar, Assam, Malay Peninsula, Sumatra, Borneo; (Figs. 25–28) . . . . *C.* (s. str.) *numa* LANSBERGE.

20(19) Clypeal margin rather narrowly and deeply incised at the middle, with a well-reflexed and rounded lobe on either side of the incision; pronotum with a slight declivity behind anterior margin, with upper edge very obtuse, not ridged; 16.0–16.5 mm; N. Thailand; (Figs. 29–32) . . . . *C.* (s. str.) *lannathai* sp. nov.

21(22) Clypeal margin not distinctly incised at the middle; pronotum without a longitudinal groove along midline; 20–24.5 mm; Thailand, Myanmar, Tenasserim, Laos, Vietnam, Malay Peninsula; (Figs. 33–36) . . . . . . *C.* (s. str.) *iris* SHARP.

22(21) Clypeal margin distinctly incised at the middle, mostly with a slight lobe on either side of the incision; pronotum with a longitudinal groove along midline . . . . 23.

23(24) Terminal spur of protibia distinctly incurved near apex; . . . . 25.

24(23) Terminal spur of protibia not incurved but almost straight or a little outcurved near apex . . . . 31.

25(26) Pygidium not strongly punctate, at apical portion in particular; clypeal margin narrowly and deeply incised at the middle, with a rounded lobe on either side of the incision; terminal spur of protibia distinctly but not so strongly incurved, with apical margin gently rounded, inner apical end not pointed; pronotum with front angles truncate, the outer corner rounded; 14.0–21.5 mm; Thailand, Assam, Tenasserim, Myanmar, Cambodia, S. Vietnam, S. & E. China, Java; (Figs. 37–40) . . . . *C.* (s. str.) *sinicus* Hope.

26(25) Pygidium strongly punctate throughout . . . . 27.

27(28) Pronotum with front angles sub-obliquely truncate, the outer corner angulate, clearly sinuate laterad; basal margin gently rounded, not produced at the middle; clypeal margin widely and shallowly incised at the middle; 13.0–18.0 mm; Thailand, Kashmir, Assam, Nepal . . . . *C.* (s. str.) *sarpedon* Harold.

28(27) Pronotum with front angles truncate or sub-obliquely truncate, the outer corner rounded, not clearly sinuate laterad; basal margin slightly but distinctly produced at the middle; clypeal margin not widely and shallowly incised at the middle . . . . 29.

29(30) Clypeal margin widely and shallowly incised at the middle, without a distinct rounded lobe on each side of the incision; terminal spur of protibia short, distinctly shorter than the length of four basal segments combined; 14.0–17.2 mm; Thailand, Myanmar, SW. China (Sichuan); (Figs. 41–44) . . . . *C.* (s. str.) *punctatus* Gillet.

30(29) Clypeal margin narrowly and deeply incised at the middle, with a rounded lobe on each side of the incision; terminal spur of protibia long, distinctly longer than the length of four basal segments combined;16.0–18.3 mm; Thailand, Assam, Myanmar; (Figs. 45–48) . . . . *C.* (s. str.) *carinicus* Gillet.

31(32) Pronotum with front angles well-produced, not widely truncated; meso- and metafemora with each ventral side evenly and coarsely punctate; small species; 12.0–14.2 mm; Thailand, N. Vietnam, SW. China (Sichuan); (Figs. 49–52) . . . . *C.* (s. str.) *angusticornis* Arrow.

32(31) Pronotum with front angles widely truncated or rounded; meso- and metafemora with each ventral side not evenly and coarsely punctate; medium to large species (more than 16 mm) . . . . 33.

33(34) Front femur with ventral side sparsely and finely punctate; eyes relatively large, the interspace between them about 3.2–3.8 times the width of an eye; 13–17 mm; Thailand; Malay Peninsula, Sumatra, Borneo, Nicobar Is.; (Figs. 53–56). . . . . *C.* (s. str.) *spinator* Harold.

34(33) Front femur with ventral side closely and coarsely punctate; eyes relatively small, the interspace between them separated more than 4 times the width of an eye . . . . 35.

35(36) Meso- and metafemora with each ventral side sparsely and finely punctate except for strongly punctate apical portion; elytra with intervals gently convex; 18.0–22.0 mm; Thailand, Sikkim, Myanmar, N. Vietnam, Laos, S. China

(Yunnan, S. Sichuan); (Figs. 57–60) .... *C.* (s. str.) *magicus* HAROLD.

36(35) Meso- and metafemora with each ventral side sparsely and finely punctate in interior half, rather closely and coarsely so in external half; elytra with intervals almost flat; 16.0–23.3 mm; Thailand, Myanmar, S. India, Sri Lanka, S. China; (Figs. 61–64) .... *C.* (s. str.) *repertus* WALKER.

37(38) Pronotum and elytra not very densely punctate though strongly punctate. Dorsal side not entirely opaque; colour reddish-brown to blackish-brown; 11.8–18.2 mm; Thailand, Assam, Myanmar, N. Vietnam, Laos, Cambodia, Malay Peninsula, Java, Sulawesi; (Figs. 65–68)............................ .... C. (*Paracopris*) *punctulatus* (WIEDEMANN).

38(37) Pronotum and elytra very densely and coarsely punctate; dorsal side opaque except for head weakly shining; colour chocolate-brown to blackish brown .... 39.

39(40) Pygidium densely and a little coarsely punctate, the punctures very shallow, mostly separated by one to two times their diameters at the middle; 9.0–14.3 mm; Thailand, Myanmar, Assam; (Figs. 69–72).................. .... *C.* (*Paracopris*) *furciceps* FELSCHE.

40(39) Pygidium very densely and coarsely punctate, the punctures a little shallow, mostly separated by less than a half their diameter at the middle; 11.0–14.2 mm; Thailand, S. China; (Figs. 73–76)............................ .... *C.* (*Paracopris*) *cariniceps* FELSCHE.

Genus ***Microcopris*** BALTHASAR, 1958

Microcopris BALTHASAR, 1958, Acta ent. Mus. natn. Pragae, **32**: 474. Type species: *Scarabaeus reflexus* FABRICIUS, 1787.

Systematic position. BALTHASAR (1958) described *Microcopris* as a subgenus of the genus *Copris*, and cited (1963) it as one of the two subgenera of *Copris* from the Palearctic and Oriental Regions. FERREIRA (1961) raised the *Microcopris* to a genus, because of its peculiarities enumerated in the following description.

General features. This genus is allied to the genus *Copris*, and identical with it in such major features as the elytra with ten striae and one strong lateral costa along the 10th stria, the protibiae without three sub-obliquely longitudinal carinae on the ventral side, and so on. As shown in the key to the genera, however, members of this genus possess the head mostly with a tubercle (rarely with a horn), and the pronotum mostly simple (a pair of protuberances in some species), with the front angles not distinctly truncate but strongly and sub-triangularly produced anteriad, and excavated on the ventral side, the posterior edge of the excavation defined by a deep impression, and the protibiae clearly broad, deplanate dorsally, without a distinct carina arising from outer teeth on dorsal side. Most species are rather small.

Distribution. SW. China, Vietnam, Laos, Thailand, Myanmar, Malay Peninsula, Sunda Islands.

Key to the Species of the Genus *Microcopris* from Thailand

1(2) Body oval, not distinctly convex, widened posteriad; elytron relatively short, with 10th stria not interrupted near apex but distinctly impressed throughout; clypeal margin widely incised at the middle, with a rounded lobe on either side of the incision; 10.0–13.0 mm; Thailand, Assam, Laos, Cambodia, Vietnam; (Figs. 76–80) .... *M. vitalisi* (GILLET)3).

2(1) Body elongate-oval, strongly convex, not obviously widened posteriad; elytron elongate, with the 10th stria not distinctly impressed throughout but interrupted near apex; .... 3.

3(4) Clypeal margin rather widely and shallowly incised at the middle, with a subtriangular tooth on either side of the incision; 7.0–11.0 mm; Thailand, S. China, Taiwan, Laos; (Figs. 81–84)..................... *M. propinquus* (FELSCHE).

4(3) Clypeal margin distinctly narrowly and deeply incised at the middle, with a rounded lobe on either side of the incision; 7.0–11.0 mm; Thailand, M. Vietnam (Annam), Myanmar, "Hinterindien", Malay Peninsula, China, Indonesia; (Figs. 85–88) .... *M. reflexus* (FABRICIUS).

要　　約

Yupa HANBOONSONG・益本仁雄・越智輝雄：タイ産の食糞コガネムシ類．V. *Copris* および *Microcopris* 属について．—— タイ産の食糞コガネムシ (Scarabaeidae) 研究の第5回として，ダイコクコガネ亜科 (Coprinae) ダイコクコガネ族ダイコクコガネ属 (*Copris*) および *Microcopris* 属をとりあげた．ダイコクコガネ属では，既知種の検討に加え，3新種 *C.* (s. str.) *uenoi* sp. nov., *C.* (s. str.) *lannathai* sp. nov. および *C.* (s. str.) *mongkhoni* sp. nov. を記載し，すべての種の検索表を用意した．*Microcopris* 属は，この地域から3種の分布を確認し，同じく検索表を用意した．各種の全体および雄交尾器の明瞭な写真をつけ，同定を容易にするようにつとめた．

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